Solar Systems for Schools in the Province of Jujuy

Location: Province of Jujuy
Type: Rural electrification
Size: 1,500 110-W photovoltaic (PV) systems
Funding: Total: US$1,400,000
Private: US$700,000
Public: US$700,000
Objective: To provide electricity to off-grid rural areas.
Duration: 2001–2002
Scale: Rural

Summary

One thousand five hundred rural schools now have electricity provided by PV systems. The rural electrification project stems from an aggressive utility privatization plan. It represents the first actual implementation project in Latin America where international funding, local government policies, the private sector, and community representatives have joined in the common goal of applying renewable energy systems to a rural electrification sustainable business model.

In-Country Principles That Attracted Nondonor Financing

- Capacity building and informed decision making
- Institution building and access to justice and enforcement of laws
- Public participation in, and support of, sustainable development

A key factor in attracting private-sector investment has been allowing utilities to operate under standard commercial practices, which include financial recordkeeping systems consistent with international accounting standards and a management team independent of the government. Participation in international forums and workshops helped energy-sector professionals increase their knowledge and skills in commercial business practices, cost-based pricing, international accounting standards, competitive energy market operations, independent energy regulation, and management of private-sector involvement.

Institution-building principles that attracted private financing included the creation of competitive markets and a successful energy restructuring. Also important was a comprehensive energy law consistent with global norms and standards characterized by basic policies and priorities; separate policy making, ownership, and regulatory functions; an independent regulator; and a framework for private investment and ultimate privatization. A legal and regulatory framework covering tariffs, social and security issues, and the privatization process was key. Technical assistance, in which development partners worked with Argentine nationals to allow corporate restructuring of energy enterprises to support commercial operations, also helped attract private financing.

Also important were increased knowledge of, and participation in, energy decision making, facilitated through citizen education and an institutionalized sustainable education, communication, and outreach program.

Financing

Total costs were US$1,400,000. BP Solar (United States [US]) was involved in the amount of US$700,000; the Government of Argentina and the World Bank/Global Environment Facility (GEF) each contributed US$350,000.

Empresa Jujeña de Sistemas Energéticos Dispersos Sociedad Anónima (EJEDSA), the utility company for Jujuy, is a private company. As part of its concession contract with the government, it is required to provide electricity through renewable energy sources for dispersed public and private users. BP Solar was awarded the contract to provide 1,500 PV systems. Special financial terms (LIBOR [London Interbank Offered Rate] plus 1.5%) for a five-year US Export-Import Bank (Eximbank) loan were arranged between the utility and BP Solar for equipment purchase.

The debt/equity ratio for the project was 50:50. A key factor for sustainability is that maintenance and operation of the installed systems comes from monthly user fees.

The Project

One thousand five hundred schools that were never part of the power grid now have access to reliable and economical electricity through PV systems.

An aggressive privatization and concession plan for the utilities was the main engine for success. Utilities joining the program are obligated to use PV systems to supply electricity to the dispersed areas of the province, where there is no conventional grid. Community buildings (schools, health centers, police stations) and home users in those rural areas apply to the utility to install the PV systems where the conventional grid is not available. A fee-for-service rate approved by the federal government is applied for those users. The collected fees are reinvested for maintenance and operation services as a sustainable business model.

Residential sectors benefit through improved health, lighting, and education. The utility sector benefits by extending its coverage and adding new customers beyond the schools.

The project is 75% complete (three of four scheduled deliveries have been made). The final delivery is on hold pending resolution of recent social and economic problems in Argentina.

Technical Data

Each of the 1,500 PV systems includes a 110-Wp solar panel, a solar controller, a 150 Ah/12-V battery, an 11W/12V lamp, and a wiring kit. Local components are used where possible.

Performance Data

With the addition of the 1,500 rural schools, the electrification index in the province increased by 10%.

The market value of services achieved because of the project is US$1,400,000. More than 50% of the total investment came from local suppliers of batteries, lamps, wiring kits, and battery containers, and local installation services.

Energy demand has been reduced by 10%.

Participants and Roles

EJEDSA (the private utility company) provides electricity from PV systems to rural schools off the power grid. BP Solar (US) supplied the PV systems; the equipment purchase was supported by a US Eximbank loan. The Secretaria de Energia of the Federal Government of Argentina was responsible for program and policy development with assistance and funding from the World Bank/GEF. Allfirst Bank was the US intermediary bank.

The World Bank, Organization of American States, Renewable Energies in the Americas (REIA), and US Solar Energy Industry Association (SEIA) conducted regional seminars that helped attract project interest and financing.

Partner Contacts

Carlos Arias, General Manager EJEDSA
Independencia No. 60
4.600 S.S. de Jujuy, Argentina
Phone: 54-388-4239-95-55
Fax: 54-388-4239-95-55

Luis Raygada, Director – Latin America
BP Solar
Lima, Peru
Phone: 511-463-2828
Fax: 511-461-5350
E-mail: raygadale@bp.com